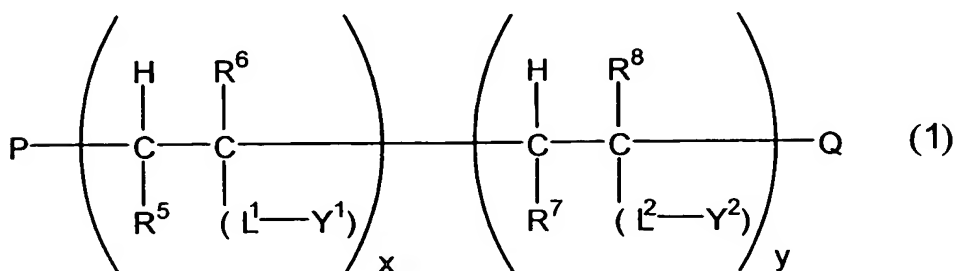


CLAIMS

What is claimed is:

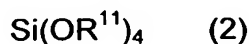
1. A film-forming composition comprising a hydrolysis product and/or a condensation product of a compound having a repeating unit represented by Formula (1) below



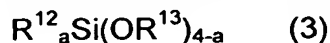
(in the formula, at least one of P and Q is a silane coupling group represented by $-\text{L}^3-\text{Si}(\text{R}^3)_m(\text{OR}^4)_{3-m}$, R^3 , R^4 , R^5 , R^6 , R^7 , and R^8 independently denote a hydrogen atom or a hydrocarbon group having 1 to 8 carbons, m denotes 0, 1, or 2, x denotes a range of 100 to 1 mol %, y denotes a range of 0 to 99 mol %, and P and Q denote terminal groups; L^1 , L^2 , and L^3 independently denote a single bond or a divalent organic linking group, Y^1 and Y^2 independently denote $-\text{N}(\text{R}^9)(\text{R}^{10})$, $-\text{OH}$, $-\text{NR}^0\text{COR}^9$, $-\text{CON}(\text{R}^9)(\text{R}^{10})$, $-\text{OR}^9$, $-\text{CONR}^9_2$, $-\text{COR}^9$, $-\text{CO}_2\text{M}$, $-\text{COOR}^9$, or $-\text{SO}_3\text{M}$, in which R^0 , R^9 , and R^{10} independently denote a hydrogen atom or an alkyl group having 1 to 8 carbons, R^0 and R^9 may form a ring structure, and M denotes a hydrogen atom, an alkali metal, an alkaline earth metal, or onium).

2. The film-forming composition according to Claim 1, wherein L^1 and L^2 in Formula (1) are single bonds and L^3 is an alkylene group.

3. The film-forming composition according to Claim 1, wherein the composition comprises a hydrolysis product and/or a condensation product of a compound represented by Formula (1) and at least one type of silane compound selected from the group consisting of a compound represented by Formula (2) below and a compound represented by Formula (3) below



(in the formula, R^{11} denotes a monovalent organic group)

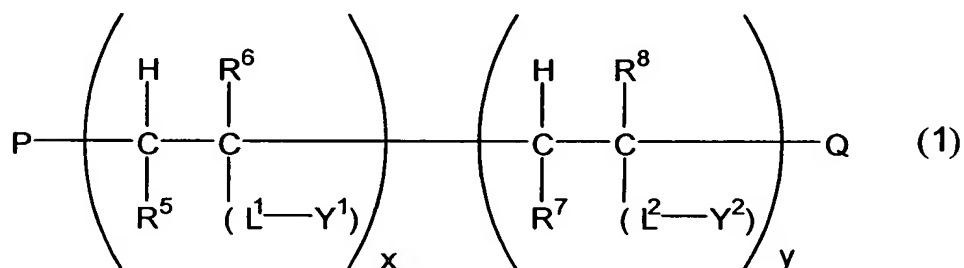


(in the formula, R^{12} denotes a hydrogen atom, a fluorine atom, or a monovalent organic group, R^{13} denotes a monovalent organic group or an organosilicon group, and a denotes an integer of 1 or 2).

4. The film-forming composition according to Claim 3, wherein R^{11} in Formula (2) is an alkyl group having 1 to 5 carbons.

5. The film-forming composition according to Claim 3, wherein R^{12} and R^{13} in Formula (3) independently denote an alkyl group having 1 to 5 carbons.

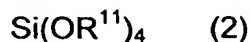
6. A process for producing a film-forming composition, the process comprising a step of hydrolyzing and/or condensing a compound having a repeating unit represented by Formula (1) below



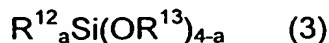
(in the formula, at least one of P and Q is a silane coupling group represented by $-L^3-Si(R^3)_m(OR^4)_{3-m}$, R^3 , R^4 , R^5 , R^6 , R^7 , and R^8 independently denote a hydrogen atom or a hydrocarbon group having 1 to 8 carbons, m denotes 0, 1, or 2, x denotes a range of 100 to 1 mol %, y denotes a range of 0 to 99 mol %, and P and Q denote terminal groups; L^1 , L^2 , and L^3 independently denote a single bond or a divalent organic linking group, Y^1 and Y^2 independently denote $-N(R^9)(R^{10})$, $-OH$, $-NR^0COR^9$, $-CON(R^9)(R^{10})$, $-OR^9$, $-CONR^9_2$, $-COR^9$, $-CO_2M$, $-COOR^9$, or $-SO_3M$, in which R^0 , R^9 , and R^{10} independently denote a hydrogen atom or an alkyl group having 1 to 8 carbons, R^0 and R^9 may form a ring structure, and M denotes a hydrogen atom, an alkali metal, an alkaline earth metal, or onium).

7. The process for producing a film-forming composition according to Claim 6, wherein the process comprises a step of hydrolyzing and/or condensing a compound represented by Formula (1) and at least one type of silane compound selected from the group consisting of a compound

represented by Formula (2) below and a compound represented by Formula (3) below

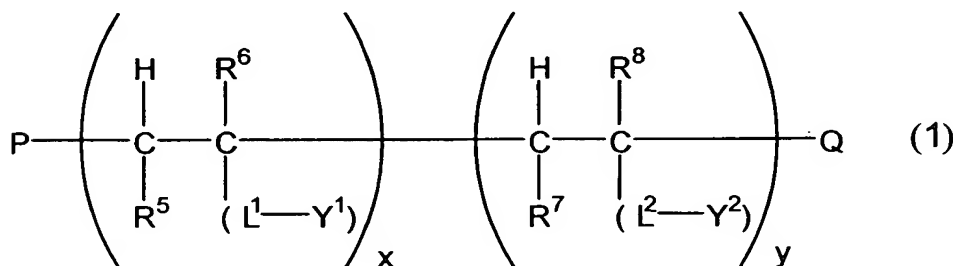


(in the formula, R^{11} denotes a monovalent organic group)



(in the formula, R^{12} denotes a hydrogen atom, a fluorine atom, or a monovalent organic group, R^{13} denotes a monovalent organic group or an organosilicon group, and a denotes an integer of 1 or 2).

8. A porous insulating film formed by using a film-forming composition comprising a hydrolysis product and/or a condensation product of a compound having a repeating unit represented by Formula (1) below

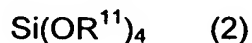


(in the formula, at least one of P and Q is a silane coupling group represented by $-\text{L}^3-\text{Si}(\text{R}^3)_m(\text{OR}^4)_{3-m}$, R^3 , R^4 , R^5 , R^6 , R^7 , and R^8 independently denote a hydrogen atom or a hydrocarbon group having 1 to 8 carbons, m denotes 0, 1, or 2, x denotes a range of 100 to 1 mol %, y denotes a range of 0 to 99 mol %, and P and Q denote terminal groups; L^1 , L^2 , and L^3 independently denote a single bond or a divalent organic linking group, Y^1 and Y^2 independently denote $-\text{N}(\text{R}^9)(\text{R}^{10})$, $-\text{OH}$, $-\text{NR}^0\text{COR}^9$, $-\text{CON}(\text{R}^9)(\text{R}^{10})$, $-\text{OR}^9$, $-\text{CONR}^9_2$, $-\text{COR}^9$, $-\text{CO}_2\text{M}$, $-\text{COOR}^9$, or $-\text{SO}_3\text{M}$, in which R^0 , R^9 , and R^{10} independently denote a hydrogen atom or an alkyl group having 1 to 8 carbons, R^0 and R^9 may form a ring structure, and M denotes a hydrogen atom, an alkali metal, an alkaline earth metal, or onium).

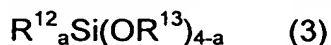
9. The porous insulating film according to Claim 8, wherein L^1 and L^2 in Formula (1) are single bonds and L^3 is an alkylene group.

10. The porous insulating film according to Claim 8, wherein the film-forming composition comprises a compound represented by Formula (1) and at

least one type of silane compound selected from the group consisting of a compound represented by Formula (2) below and a compound represented by Formula (3) below



(in the formula, R^{11} denotes a monovalent organic group)



(in the formula, R^{12} denotes a hydrogen atom, a fluorine atom, or a monovalent organic group, R^{13} denotes a monovalent organic group or an organosilicon group, and a denotes an integer of 1 or 2).

11. The porous insulating film according to Claim 10, wherein R^{11} in Formula (2) is an alkyl group having 1 to 5 carbons.

12. The porous insulating film according to Claim 10, wherein R^{12} and R^{13} in Formula (3) independently denote an alkyl group having 1 to 5 carbons.